PATENT

Listing of Claims:

Claims 1-81 (canceled)

Claim 82 (previously presented): A method of roasting coffee beans comprising the steps of:

establishing the degree to which the coffee beans must be roasted to attain a desired aroma;

generating a measurable first parameter which is indicative that the coffee beans have been sufficiently roasted to yield the desired aroma;

storing the first parameter;

roasting fresh coffee beans at a roasting temperature by flowing heated air over the fresh coffee beans;

filtering substantially all pollutants from the heated air following the roasting step;

thereafter reheating and recirculating a major portion of the substantially pollutant-free air over the fresh coffee beans to thereby continue roasting;

cooling a minor portion of the filtered air to no more than about 115° F and discharging the cooled minor portion of the air into an interior of a building frequented by humans while reheating and recirculating the major portion of the air for further use during roasting;

monitoring a second parameter which is compatible with the first parameter and is generated by the fresh coffee beans during roasting;

upon detecting a match between the first and second parameters, discontinuing the roasting step; and

wherein the steps of roasting, filtering, reheating, recirculating, cooling and discharging are simultaneously and continuously performed while roasting is in progress.

Claim 83 (previously presented): A method according to claim 82 wherein the first parameter is one of the color and darkness of the coffee beans and the second parameter is one of the color and darkness of the fresh coffee beans during roasting.

Claim 84 (previously presented): A method according to claim 82 wherein the steps of roasting, filtering, reheating, recirculating, cooling and discharging are simultaneously and continuously performed while roasting is in progress;

including adjusting the step of discontinuing the roasting of the fresh coffee beans as a function of at least one of the roasting temperature and atmospheric pressure.

Claim 85 (previously presented): A method according to claim 82 wherein the step of monitoring comprises making a spectral analysis of the fresh coffee beans during the roasting step.

Claim 86 (previously presented): A method according to claim 85 wherein the step of making a spectral analysis comprises directing a laser beam onto the fresh coffee beans during the roasting step.

Claim 87 (previously presented): A method according to claim 86 wherein the laser beam has a wavelength in the range of between about 600 to 800 nm.

Claim 88 (previously presented): A method according to claim 82 further comprising the steps of providing a multiplicity of different coffee bean types, establishing and storing the first parameter for each coffee bean type, prior to the roasting step selecting one of the multiplicity of coffee bean types for roasting; and wherein the step of discontinuing is carried out when there is a match between the first parameter for the selected coffee bean type and the second parameter.

Claim 89 (previously presented): A method according to claim 88 further comprising the step of establishing a plurality of first parameters for at least one of the multiplicity of coffee bean types, each of which defines a different degree to which the coffee beans must be roasted to attain correspondingly differing desired aromas; prior to the roasting step selecting one of the plurality of first parameters for the at least one coffee bean type; and wherein the step of discontinuing is performed when the second parameter matches the selected one of the first parameters.

Claim 90 (previously presented): A method of automatically roasting coffee beans to attain a predetermined, desired coffee aroma, the method comprising the steps of:

roasting a sample of the beans to a degree at which coffee made with the beans exhibits the desired aroma;

sensing one of a color and a darkness of the beans when the beans have reached the degree of roasting and from the sensed color or darkness generating a first parameter which is indicative of the sensed color or darkness of the bean sample;

storing the first parameter; thereafter roasting a batch of more than one pound of fresh beans by flowing heated air over the fresh beans;

cleaning the heated air after it has passed the fresh beans so that the air is substantially pollutant-free;

cooling the air after the air has passed the fresh beans to no more than about 115° F while continuing flowing the heated air over the fresh beans;

discharging the cooled, pollutant-free air into a substantially closed room frequented by humans;

monitoring one of the color and darkness of the fresh beans being roasted and generating a second parameter which is indicative of a color or darkness of the fresh beans;

comparing the first and second parameters during roasting of the fresh beans;

terminating the roasting of the fresh beans when the first and second parameters match; and

wherein the steps of roasting, cleaning, cooling and discharging are simultaneously and continuously performed while roasting is in progress.

Claim 91 (previously presented): A method for uniformly roasting coffee beans at a plurality of geographically separate locations, the method comprising:

placing a roasting machine at each location inside an enclosed room frequented by humans;

equipping each roasting machine with a roasting container for holding fresh beans while the beans are being roasted, a hot air supply for heating the fresh beans to a roasting temperature, and an air removal system for directing used air away from the container;

removing from the used air substantially all debris, smoke, oil, and other pollutants in a filtration system;

after the step of removing, cooling the used air, discharging the at least a portion of the cooled air into the enclosed room while continuing heating the fresh beans;

recirculating a remaining portion of the cooled air to the hot air supply;

directing a laser light beam of a frequency in the range of between about 600-800 nm onto the beans in the container during roasting;

generating an output signal from laser light reflected by the beans which is a function of the observed darkness of the beans;

providing each roasting machine with a computer including a memory; feeding the output signal to the computer;

at a central control station determining an optimal darkness for each bean type that will be roasted by the roasting machines;

at the control station generating a control signal which reflects the optimal darkness of each roasted bean type;

downloading the control signal from the central control station to the computer of each roasting machine;

during roasting at any given roasting machine comparing the control signal stored in the associated memory with the output signal generated by the instrument; when the compared signals match, generating a command signal; and

using the command signal to terminate the roasting of the beans in the container;

wherein the steps of removing, cooling, discharging and recirculating are simultaneously and continuously performed while roasting is in progress.

Claim 92 (previously presented): A method according to claim 91 further comprising the steps of:

keeping an inventory of fresh beans proximate each roasting machine;

monitoring the size of the fresh bean inventory;

generating a low-inventory signal when the fresh bean inventory drops below a predetermined level;

transmitting the inventory control signal to the central control station; and

transferring additional fresh beans to the roasting machine which generated the low-inventory signal upon receipt thereof at the control station.

Claim 93 (previously presented): A method according to claim 91 wherein each roasting machine has a plurality of different fresh bean types which can be roasted and wherein the method further comprises the steps of:

generating an optimal darkness signal for each bean type at the control station; downloading each darkness signal to the computers of the roasting machines of the system; and,

during roasting at any given one of the roasting machines, comparing the output signal from the instrument with the stored darkness signal which corresponds to the bean type being roasted in the container.

Claim 94 (previously presented): A method of roasting coffee beans comprising the steps of:

establishing the degree to which the coffee beans must be roasted to attain a desired aroma;

generating a measurable first parameter which is indicative that the coffee beans have been sufficiently roasted to yield the desired aroma;

storing the first parameter;

roasting a batch of more than one pound of fresh coffee beans at a roasting temperature by flowing heated air over the fresh coffee beans;

while flowing heated air over the fresh coffee beans, removing substantially all pollutants from the air downstream of the fresh coffee beans being heated in a filtration system, cooling at least a portion of the air downstream of the fresh coffee beans to no more than about 115° F, and thereafter, while continuing to flow heated air over the fresh coffee beans, exhausting the cooled air directly into a room of a building without recirculating any part of the cooled air into the filtration system;

monitoring a second parameter which is compatible with the first parameter and is generated by the fresh coffee beans during roasting; and,

upon detecting a match between the first and second parameters, discontinuing the roasting step.

Claim 95 (previously presented): A method according to claim 94 wherein the first parameter is one of the color and darkness of the coffee beans and the second parameter is one of the color and darkness of the fresh coffee beans during the roasting step.

Claim 96 (previously presented): A method according to claim 94 including adjusting the step of discontinuing the roasting of the fresh coffee beans as a function of at least one of the roasting temperature and atmospheric pressure.

Claim 97 (previously presented): A method according to claim 94 wherein the step of monitoring comprises making a spectral analysis of the fresh coffee beans during the roasting step.

Claim 98 (previously presented): A method according to claim 97 wherein the step of making a spectral analysis comprises directing a laser beam onto the fresh coffee beans during the roasting step.

Claim 99 (previously presented): A method according to claim 98 wherein the laser beam has a wavelength in the range of between about 600 to 800 nm.

Claim 100 (previously presented): A method according to claim 99 further comprising the steps of providing a multiplicity of different coffee bean types, establishing and storing the first parameter for each coffee bean type, prior to the roasting step selecting one of the multiplicity of coffee bean types for roasting; and wherein the step of discontinuing is carried out when there is a match between the first parameter for the selected coffee bean type and the second parameter.

Claim 101 (previously presented): A method according to claim 100 further comprising the step of establishing a plurality of first parameters for at least one of the multiplicity of coffee bean types, each of which defines a different degree to which the coffee beans must be roasted to attain correspondingly differing desired aromas; prior to the roasting step selecting one of the plurality of first parameters for the at least one coffee bean type; and wherein the step of discontinuing is performed when the second parameter matches the selected one of the first parameters.

Claim 102 (previously presented): A method of roasting coffee beans comprising the steps of:

establishing the degree to which the coffee beans must be roasted to attain a desired aroma by determining a first parameter which comprises at least one of a color and a degree of darkness which the coffee beans must have to yield the desired aroma;

generating at least one second parameter which reflects a predetermined development of the first parameter during a roasting of the coffee beans;

storing the parameters;

roasting fresh coffee beans at a roasting temperature;

monitoring the first parameter during roasting and discontinuing the roasting step when the coffee beans reaches the first parameter;

monitoring the at least one second parameter during roasting; and

adjusting the roasting step when the second parameter indicates that a deviation from the predetermined development of the first parameter occurred to thereby reestablish the predetermined development of the second parameter.

Claim 103 (previously presented): A method according to claim 102 wherein the second parameter comprises at least one of the roasting temperature and atmospheric pressure.

Claim 104 (previously presented): A method according to claim 102 wherein the step of monitoring the first parameter comprises directing a laser beam onto the fresh coffee beans during the roasting step.

Claim 105 (previously presented): A method according to claim 104 wherein the laser beam has a wavelength in the range of between about 600 to 800 nm.

Claim 106 (previously presented): A method according to claim 102 further comprising the steps of providing a multiplicity of different coffee bean types, establishing and storing the first parameter for each coffee bean type, prior to the roasting step selecting one of the multiplicity of coffee bean types for roasting; and wherein the step of discontinuing is carried out when the coffee beans reach the first parameter for the selected coffee bean type.

Claim 107 (previously presented): A method according to claim 106 further comprising the step of establishing a plurality of first parameters for at least one of the multiplicity of coffee bean types, each of which defines a different degree to which the coffee beans must be roasted to attain correspondingly differing desired aromas; prior to the roasting step selecting one of the plurality of first parameters for the at least one coffee bean type; and wherein the step of discontinuing is performed when the coffee beans reach the selected one of the first parameters.

Claim 108 (previously presented): A method according to claim 102 wherein the roasting step comprises flowing heated air over the fresh coffee beans, and including the steps of removing substantially all pollutants from the air downstream of the fresh coffee beans being heated, cooling the air downstream of the fresh coffee beans to no more than about 115° F, and thereafter exhausting the cooled air into an enclosed room of a building.

Claim 109 (previously presented): A method according to claim 102 wherein the step of roasting includes flowing heated air over the fresh coffee beans, and including the steps of filtering substantially all pollutants from the heated air following the roasting step, thereafter reheating and recirculating a major portion of the substantially pollutant-free air over the fresh coffee beans to thereby continue the roasting step; and discharging a minor portion of the filtered air prior to reheating and recirculating the major portion of the air.

Claim 110 (previously presented): A method of roasting coffee beans in a supermarket located inside a building, the method comprising the steps of:

establishing the degree to which the coffee beans must be roasted to attain a desired aroma;

generating a measurable first parameter which is indicative that the coffee beans have been sufficiently roasted to yield the desired aroma;

storing the first parameter;

roasting fresh coffee beans at a roasting temperature by flowing heated air over the fresh coffee beans;

while flowing heated air over the fresh coffee beans removing substantially all pollutants from the air downstream of the fresh coffee beans being heated, cooling the air

downstream of the fresh coffee beans to no more than about 115° F, and thereafter, while continuing to flow heated air over the fresh coffee beans, exhausting the cooled air into the supermarket;

monitoring a second parameter which is compatible with the first parameter and is generated by the fresh coffee beans during roasting; and,

upon detecting a match between the first and second parameters, discontinuing the roasting step.

Claim 111 (previously presented): A method of automatically roasting coffee beans to attain a predetermined, desired coffee aroma, the method comprising the steps of:

roasting a sample of the beans inside a supermarket to a degree at which coffee made with the beans exhibits the desired aroma;

sensing one of a color and a darkness of the beans when the beans have reached the degree of roasting and from the sensed color or darkness generating a first parameter which is indicative of the sensed color or darkness of the bean sample;

storing the first parameter;

thereafter roasting fresh beans by flowing heated air over the fresh beans;

cleaning the heated air after the heated air has passed the fresh beans so that the air is substantially pollutant-free;

cooling the air after the air has passed the fresh beans to no more than about 115° F while continuing flowing the heated air over the fresh beans;

discharging the cooled, pollutant-free, room temperature air into the supermarket;

monitoring one of the color and darkness of the fresh beans being roasted and generating a second parameter which is indicative of a color or darkness of the fresh beans; and

comparing the first and second parameters during roasting of the fresh beans; and terminating the roasting of the fresh beans when the first and second parameters match.